

Attorney Docket No.: 00CON159P-C1

REMARKS

In the Office Action dated May 19, 2004, the Examiner has *finally rejected* claims 18-33 and 58-66 pending in the application on the basis of new grounds of rejection. Applicant respectfully requests reconsideration and withdrawal of the finality of the rejection of the Office Action dated May 19, 2004.

A good and sufficient reason why the present response is necessary and what not earlier presented is that entirely new grounds of rejection have been cited in the present final rejection dated May 19, 2004 (37 CFR §1.116 (c)). The new grounds of rejection comprise the statements by the Examiner that Selena discloses that "[s]aid at least one signal via is coupled to said at least one bond pad without utilizing a trace . . . Said signal via runs from top to bottom surfaces of the substrate". The new grounds of rejection are for the first time brought to Applicant's attention by means of the present *final rejection* dated May 19, 2004. The new grounds of rejection were not cited in the present application prior to the instant final rejection. Since the new grounds of rejection are grounds upon which the Examiner has now relied, Applicants believe that it would be manifestly unfair for the Patent Office not to consider Applicant's arguments which are necessitated due to the new grounds of rejection. As such, a good and sufficient reason exists, as required by 37 CFR §1.116(c), for considering Applicant's present response and withdrawing the finality of the present Office Action.

Attorney Docket No.: 00CON159P-C1

A. Rejection of Claims 18-20, 22-33, and 58-66 under 35 USC §102(b)

The Examiner has rejected claims 18-20, 22-23, and 58-66 under 35 USC §102(b) as being anticipated by U.S. Patent Number 5,640,048 to Selna ("Selna"). For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by independent claims 18 and 58, is patentably distinguishable over Selna.

The present invention, as defined by independent claim 18, teaches a structure including at least one signal via (second group of vias 250) providing an electrical connection between a device electrode of the chip and the PCB attached to a substrate. The structure further includes a plurality of separate thermally conductive vias (first group of vias 255) in the substrate and coupled to a heat spreader, the heat spreader being directly attached to the bottom surface of the substrate.

The present invention, as defined by independent claim 58, teaches a structure including a heat spreader directly attached to a bottom surface of a substrate. The structure further includes a plurality of separate thermally conductive vias (first group of vias 255) in the substrate providing a connection between the semiconductor chip and the heat spreader.

Referring to page 5 of the present application, due to the configuration of the first group of vias 255, a good thermal and electrical connection from chip 100 to heat spreader 290 is provided. Moreover, referring to pages 6 and 7 of the present application, due to the configuration of second group of vias 250, no traces are necessary between the bond pads and the vias, so parasitic inductance is reduced. Due to this configuration,

Attorney Docket No.: 00CON159P-C1

electrical inductance is reduced and space is saved since traces are not needed. The heat spreader attached to the PCB allows for a very low thermal resistance. Increased reliability is also achieved due to the claimed structure, because the mechanical stress or physical displacement on the plurality of lands 280, due to the heating and cooling of the structure, is decreased due to the heat spreader. Advantageously, as recited in the independent claims and disclosed in the present application, the heat spreader is directly attached to the bottom surface of the substrate.

In contrast, Selna simply teaches IC 12, printed circuit board material 52, 54, printed circuit board 18, and conductive and/or thermal vias 6A, 6B, and 6C. Selna teaches ground plane 20C connected to solder balls 14C. However, Selna does not disclose, teach, or even suggest the advantageous configuration defined by the independent claims, including the heat spreader directly attached to the substrate. Selna provides no teaching or suggestion of achieving the advantages inherent in the structure defined by independent claims 18 and 58.

For the foregoing reasons, Applicant respectfully submits that the present invention as defined by independent claims 18 and 58 is not taught, disclosed, or suggested by Selna. Thus, independent claims 18 and 58 are patentably distinguishable over Selna. As such, the claims depending from independent claims 18 and 58 are, *a fortiori*, also patentably distinguishable over Selna for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Attorney Docket No.: 00CON159P-C1


B. Rejection of Claim 21 under 35 USC §103(a)

The Examiner has rejected claim 21 under 35 USC §103(a) as being obvious with respect to Selna. Applicant respectfully submits that claim 21 depends from independent claim 18 and thus, claim 21 should be allowed at least for the same reasons discussed above in conjunction with patentability of independent claim 18.

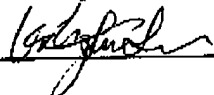
C. Conclusion

Based on the foregoing reasons, the present invention, as defined by independent claims 18 and 58, and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, outstanding claims 18-33 and 58-66 are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, the withdrawal of the present final rejection and an early Notice of Allowance directed to claims 18-33 and 58-66 pending in the present application are respectfully requested.

Attorney Docket No.: 00CON159P-C1

Respectfully Submitted,
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